

The Maritime breakout room features initiatives focused on ship fuel consumption reduction, energy efficiency, and environmental stewardship. Key programs include the following:

Program Title: Hybrid Electric Drive (HED)

Description: HED technology improves efficiency by employing fewer gas turbines while also loading gas turbines to their optimal operating condition.

What It Will Accomplish: It will reduce fuel consumption at least 10% and increase mission effectiveness through longer time on station.

Program Title: Smart Voyage Planning (SVP)

Description: SVP is a software application that utilizes ship performance data combined with real-time environmental information in order to compute an optimal fuel efficiency route.

What It Will Accomplish: It will reduce fuel consumption fleet-wide by providing ships an optimal route to maximize ship fuel efficiency.

Program Title: High Efficiency Chiller

Description: HEC technology utilizes a 2-stage compressor, variable speed compressor, and a high-speed magnetic motor for a more efficient, larger capacity and environmentally friendly cooling method.

What It Will Accomplish: It will reduce fuel consumption by utilizing more energy efficient equipment and will drastically reduce the leakage of refrigerant, a greenhouse gas.

Program Title: USS Makin Island (LHD-8) Large Deck Amphibious Assault Ship

Description: Set for commissioning 24 October 2009, the LHD-8 will utilize, among other energy efficient technologies, a combined diesel electric and gas turbine (CODLAG) plant.

What It Will Accomplish: The hybrid plant, along with other energy efficient technologies, reduces fuel consumption.

Program Title: Fleet Readiness Research & Develop Program (FRR&DP)

Description: FRR&DP seeks out quick win and easily implemented opportunities for the current fleet with technologies such as stern flaps for surface combatant ships.

What It Will Accomplish: FRR&DP is currently evaluating a number of different technologies, such as stern flaps for amphibious ships, advanced hull coatings, solid state lighting, and many more.

Other programs include: Reverse Osmosis, i-ENCON, Team Ships, Electric Ship Office, Online Gas Turbine Water Wash, Solid State Lighting, Energy Storage, Stern Flaps, Hull Coatings, Energy Weapons, & Shipboard Energy Mgt

Point of Contact: Mr. Thomas Martin, Naval Sea Systems Command, thomas.w.martin@navy.mil

The Aviation breakout room features initiatives focused on aircraft fuel consumption reduction, energy efficiency and environmental stewardship. Key programs include the following:

Program Title: Green Hornet

Description: As the winner of four consecutive CNO Environmental Excellence awards, the *Green Hornet* team is leading the fleet in energy innovation. Efforts include an upcoming F414 engine efficiency demonstration, trapped vortex combustion development, and renewable fuel test certification.

What It Will Accomplish: Increased fuel efficiency, reduced fuel consumption, lower engine emissions and reduced reliance on petroleum-based fuel

Program Title: Science & Technology

Description: Naval Aviation is advancing aircraft performance and efficiency with next-generation technologies. Development efforts include variable cycle engine technology, drag-reducing coatings, lightweight composite materials and fuel cells.

What It Will Accomplish: Game-changing technologies capable of providing significant reduction in fuel consumption

Program Title: Operations & Policy

Description: Naval Aviation is building a culture of conservation through policy, operations, and fleet engagement. Conservation efforts include F/A-18 E/F altitude certification, optimized mission planning, efficient refueling procedures and incentivization programs.

What It Will Accomplish: Reduced fuel consumption with a minimum of upfront expenditure

Program Title: Unmanned Aviation

Description: Unmanned aviation platforms provide efficient intelligence, reconnaissance, surveillance and strike capabilities. Energy conservation efforts include hydrogen fuel cells, lighter-than-air vehicles, advanced / integrated propulsion systems, lightweight composite materials and the small heavy fuel engine program.

What It Will Accomplish: Reduced fuel consumption, increased efficiency and decreased reliance on fossil fuels

Program Title: Simulation

Description: The Naval Aviation Simulation Master Plan is maximizing pilot readiness while reducing strain on aircraft and energy resources. Efforts will increase simulator capabilities, utilization, and energy efficiency.

What It Will Accomplish: Significant reduction in resource demands

Point of Contact: Mr. Rick Kamin, Naval Air Systems Command, (301) 757-3408, richard.kamin@navy.mil

The Fuels breakout room features initiatives focused on increasing energy security and reducing our carbon footprint at sea, in the air, and ashore through the certification and implementation of fuels produced from non-petroleum sources. Key programs include the following:

Program Title: Greening of Navy Fuels

Description: The program will display the sources (camelina and algae) and processes for the production of renewable fuels to be tested in Navy ship and aircraft. Displays will include an algae production tank, samples of algae and camelina biomass and their oils, and a video of the renewable jet fuel production process.

What It Will Accomplish: Provide an understanding of the feed sources and production processes that will produce the first renewable fuels to be tested in Navy aircraft and ships.

Program Title: Alternative Fuel Sources and Production Processes

Description: This program will the possible future of Navy fuel. Various near and long-term sources and production processes will be highlighted to demonstrate their potential to replace petroleum as the Navy's main fuel source.

What It Will Accomplish: Provide an understanding of the possible types of fuel that will be used by the Navy.

Program Title: Path to a Greener Navy Fuel

Description: This program will demonstrate requirements to approve an alternative fuel for Navy tactical applications. Highlighted will be the critical steps to assure that an alternative fuel is safe to use.

What It Will Accomplish: Provide an understanding of the significant effort required before an alternative fuel is approved for Navy applications.

Program Title: Base Support Vehicle and Equipment Transition

Description: This program will highlight the successes and on-going efforts to transition our petroleum-based fuel use on Naval facilities through the installation of renewable fuel pumps and stations and the implementation of green vehicles.

What It Will Accomplish: Demonstrate the current successes and on-going initiatives to reduce the Navy's dependence on petroleum.

Program Title: Science and Technology

Description: This program explores the role of Science and Technology in advancing the use of alternative fuels throughout the Navy. Highlighted will be the on-going efforts in the areas of chemical characterization, model and simulation development, and material impacts.

What It Will Accomplish: Demonstrate the importance of Science and Technology to the Navy's alternative fuels effort.

Point of Contact: Mr. Rick Kamin, Naval Air Systems Command, (301) 757-3408, richard.kamin@navy.mil

The Expeditionary breakout room features initiatives focused on expeditionary vehicle fuel consumption reduction, energy efficiency and environmental stewardship. Key programs in this functional area include:

Program Title: Talon EOD Robot Battery

Description: The Talon robot is used by Explosive Ordnance Disposal (EOD) teams to remotely diffuse bombs. However, feedback from operations by Army and USMC operators reveal the need for a longer-life battery. The ONR-sponsored team designed and delivered an innovative solution to extend the battery life of remotely powered Talon robots by 23 percent.

What It Will Accomplish: The extended battery life gives the Talon more time to diffuse complex explosives, improving operations and safety to EOD crews.

Program Title: Pocket Charger

Description: Marine-portable battery recharging solution to lower the total weight load of the Precision Laser Designation Rangefinder (PLDR), Ground Laser Target Designator (GLTD-II), and PRC 113, 117, and 119 radio sets that utilize BB-2590 batteries

What It Will Accomplish: This charger will reduce the weight that Marines carry and will reduce costs due to fewer disposable batteries.

Program Title: Energy Generating Backpack

Description: This backpack harnesses the differential forces and motion between a heavy backpack and the wearer to generate electrical power while walking. It also helps isolate the wearer from the injurious oscillatory and transient forces resulting from movement with a heavy load.

What It Will Accomplish: This device permits dismounted combatants to recharge batteries in the field while walking, as opposed to carrying extra batteries.

Program Title: Portable Fuel Analyzer

Description: This device is a user-friendly briefcase-sized spectroscopic fuel analyzer that measures laser-induced atomic vibrations and infers both chemical content and physical properties based on Raman spectra. The analyzer also tests for the presence of adulterants in the fuel caused by either improper handling or deliberate sabotage.

What It Will Accomplish: The portability of this device will enable forward units to immediately and safely capitalize on fuels of opportunity they may encounter during expeditionary operations.

Other programs include: Solid Oxide Fuel Cell Tactical Electric Power Unit, Expeditionary Water Desalinization and Purification Unit, and Medium Tactical Vehicle Replacement On-Board Power

Point of Contact: Office of Naval Research, (703) 696-5031, onrcsc@onr.navy.mil

During the breakout sessions, presentations will also occur. Schedule posted at the Breakout Room.

The Shore Working Group breakout room features initiatives focused on reducing energy consumption and increasing the use of renewable and alternative energy. Key programs include the following:

Program Title: Renewables

Description: Explores advancement of existing and emerging technologies, such as wind, solar photovoltaic, solar thermal, and geothermal energy generation, including:

- Building-integrated thin film photovoltaic
- Wave energy
- Tidal energy device
- Regenerative hydrogen fuel cell and photovoltaic hybrid
- Energy Storage

What It Will Accomplish: Applying these technologies will help us reach our goal of purchasing or producing 25% of our energy from renewable sources by 2025

Program Title: Energy Reduction Goals

Description: Testing, validation, and implementation of commercially available technologies such as:

- State-of-the-art lighting
- Condensing boilers and water heaters
- Molten carbonate fuel cell performance
- Solar-powered air conditioning
- Highly ("super") insulated windows
- Light-Emitting Diode (LED) Lighting

What It Will Accomplish: Applying these technologies will help us reach our goal of reducing water consumption by 2% annually, energy consumption by 30% by 2015, and fossil fuel consumption by 55% by 2010 and 100% by 2030

Program Title: Advanced Metering and Controls

Description: Installation of these monitoring devices allows leadership to review real-time information about infrastructure and security reliability

What It Will Accomplish: Applying these technologies will help us reach our goal of installing advanced electric meters on all buildings by 2012 and natural gas and steam metering on all buildings by 2016

Program Title: Sustainable Facilities

Description: This program develops improvements to facility designs that allow facilities to be more sustainable and more energy efficient.

What it Will Accomplish: Applying these improvements will help us reach our goal of designing facilities to reduce energy costs by 30%

Point of Contact: LCDR Tony Conley, CNIC, (202) 433-4504, anthony.m.conley@navy.mil

The Energy Efficiency Technologies breakout room features a variety of science and technology (S&T) programs from the Office of Naval Research and Naval Research Laboratory. Key programs include the following:

Program Title: Fuels S&T

Description: These are energy S&T programs that explore how the chemistries and physical properties of synthetic (e.g. Fischer-Tropsch), bio-derived, and blended fuels impact naval power systems, including gas turbines, diesel engines, and fuel storage and distribution systems.

What It Will Accomplish: This program will develop and explore processes to improve hydrocarbon fuel combustion efficiency and convert waste material to fuel.

Program Title: Power Generation S&T

Description: It develops fuel efficient, affordable shipboard and off-board power generation technologies for USMC personal power, autonomous vehicles, and shipboard power systems, and develop more fuel efficient aircraft engines.

What It Will Accomplish: It will reduce specific fuel consumption and life cycle costs, increase installed power density of electrical systems, and yield flexible distribution frequencies and affordable, more fuel-efficient aircraft engines.

Program Title: Energy Storage S&T

Description: This program develops and demonstrates energy storage options that support both constant and intermittent duty cycles for Naval applications.

What It Will Accomplish: It will yield fundamental technology to design a broad range of batteries, advanced polymer and composite dielectric films for pulsed power, and multi-layer glass-ceramic composite capacitors.

Program Title: Distribution and Control S&T

Description: This program develops new electrical system architectures based on optimum power processing concepts to yield reduced size, weight and cost.

What It Will Accomplish: It will provide design guidance for notational DC distribution system, thermal management system requirements, and robust modeling and simulation evaluation and design capability.

Category Title: Power Loads

Description: This program develops affordable and efficient power-dense electrical components, which are highly reliable, and reduce maintenance time and cost. It also designs tools for efficient low-signature hull forms.

What It Will Accomplish: It will yield full-scale, laboratory-quality motors for demonstration and model validation for test and evaluation. Reduced fuel consumption from improved hull hydrodynamics propulsion efficiency.

Point of Contact: Office of Naval Research, (703) 696-5031, onrcsc@onr.navy.mil